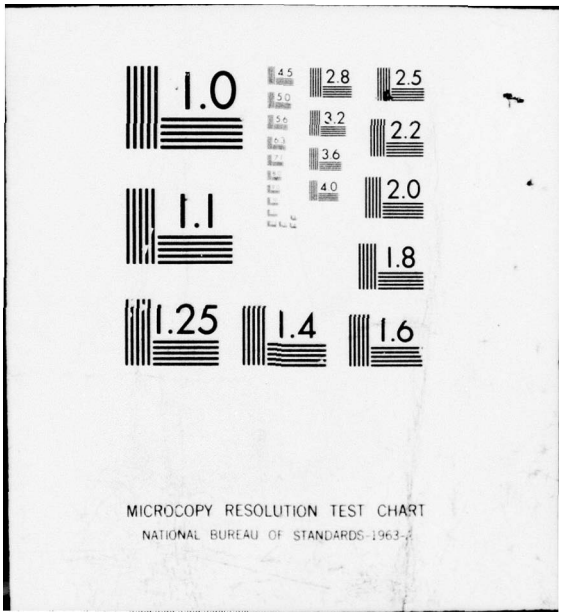
AD-A038 045 DEFENSE SYSTEMS MANAGEMENT COLL FORT BELVOIR VA F/G 5/1
TRANSITION FROM PRODUCTION DO DEPLOYMENT: (PROGRAM OFFICE RESPO--ETC(U)
NOV 76 J E MILLINER

UNCLASSIFIED NL

| OF |
AD A038045

END
DATE FILMED
4-77


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
6.3
7.1
8.0
9.0
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

AD A038045

DEFENSE SYSTEMS MANAGEMENT COLLEGE

PROGRAM MANAGEMENT COURSE
INDIVIDUAL STUDY PROGRAM

TRANSITION FROM PRODUCTION TO
DEPLOYMENT:
(PROGRAM OFFICE RESPONSIBILITIES)

STUDY PROJECT REPORT
PMC 76-2

James Edward Milliner
Major US Army

FORT BELVOIR, VIRGINIA 22060

DDC FILE COPY

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

DDC
APR 12 1977
B

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER	2. GOVT ACCESSION NO.
3. RECIPIENT'S CATALOG NUMBER	
4. TITLE *(and Subtitle)*	5. TYPE OF REPORT & PERIOD COVERED
TRANSITION FROM PRODUCTION TO DEPLOYMENT: PROGRAM OFFICE RESPONSIBILITIES,	Study Project Report, 76-2
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s)	8. CONTRACT OR GRANT NUMBER(s)
James E. Milliner	
9. PERFORMING ORGANIZATION NAME AND ADDRESS	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
DEFENSE SYSTEMS MANAGEMENT COLLEGE FT. BELVOIR, VA 22060	
11. CONTROLLING OFFICE NAME AND ADDRESS	12. REPORT DATE
DEFENSE SYSTEMS MANAGEMENT COLLEGE FT. BELVOIR, VA 22060	76-2
	13. NUMBER OF PAGES 48
14. MONITORING AGENCY NAME & ADDRESS *(if different from Controlling Office)*	15. SECURITY CLASS. *(of this report)*
	UNCLASSIFIED
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT *(of this Report)*

UNLIMITED

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

18. SUPPLEMENTARY NOTES

SEE ATTACHED SHEET

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

SEE ATTACHED SHEET

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

H10036

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

DEFENSE SYSTEMS MANAGEMENT COLLEGE

STUDY TITLE: Transition From Production to Deployment: Program Office Responsibilites.

STUDY PROJECT GOALS: To identify responsibilities, problem areas and follow-on-support requirements facing the Program Management Office when planning and executing the deployment of a new system.

STUDY REPORT ABSTRACT: The purpose of the study project was to gain an understanding of requirements, responsibilities and problem areas associated with fielding a new system and to identify those specific functions and problems facing the Program Manager. The project was carried out by reviewing applicable DOD and DA directives/regulations and personal interviews at DARCOM headquarters and selected system program offices. The report tracks deployment planning requirements throughout the materiel acquisition cycle with emphasis on development of the Materiel Fielding Plan during the Full-Scale-Development Phase. Deployment problems discussed, center around the following: verifying quality of full-scale-production items, coordinating shipments between contractor and gaining command, initial repair parts support, deployment of support units and technicians, preparedness of gaining command to accept a new system and PMO's follow-on-supprort The over all conclusions and implications of the report are: the Program Manager's responsibilities during system deployment are as critical and demanding as his responsibilities during development and production of the system, and that written deployment plans and face-to-face coordination with the gaining command are vital to successful deployment of a new system.

Subject Descriptors:

1. New Sysrem Deployment
2. Integrated Logistic Support

NAME, RANK, SERVICE	CLASS	DATE
James Edward Milliner Major US Army	76-2	5 November 1976

TRANSITION FROM PRODUCTION TO DEPLOYMENT: (PROGRAM OFFICE RESPONSIBILITIES)

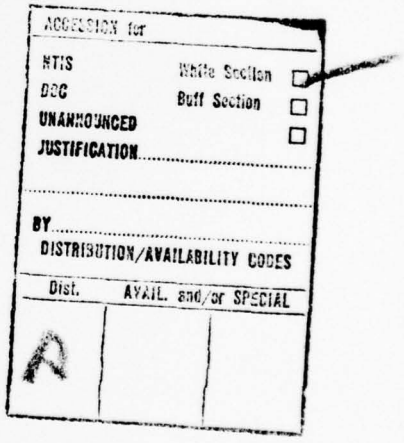
Study Project Report

Individual Study Program

Defense Systems Management College

Program Management Course

Class 76-2



by

James Edward Milliner
Major US Army

November 1976

Study Project Advisor
Mr. John Mathias

This study project report represents the views, conclusions and recommendations of the author and does not necessarily reflect the official opinion of the Defense Systems Management College or the Department of Defense.

EXECUTIVE SUMMARY

This report outlines the responsibilities and problem areas associated with new system deployment. An examination is made of the Program Manager's specific responsibilities for planning and executing deployment of a system. The implementation of Integrated Logistic Support (ILS) is accomplished throughout the materiel acquisition development and production cycle, and many of the early ILS planning factors have a direct bearing on system deployment. Therefore, this report includes these ILS Factors and the Program Manager's responsibilities for implementation.

ILS/deployment planning during the conceptual and validation phases are very general in nature, mainly because the hardware has not taken on its final configuration. During Full-Scale-Development, when the hardware is in its final military configuration, ILS/deployment planning becomes more finite. A separate Materiel Fielding Plan (MFP) is developed during this phase. This plan is not developed from scratch, but evolves from Section VI of the PM's Development Plan (Produced During Validation Phase). The MFP contains initial plans, schedules, procedures and command actions necessary to successfully deprocess, deploy and sustain the system to be fielded.

The status and completeness of the MFP are monitored in requirement/decision documents and during command reviews/ decision points throughout the remainder of the acquisition cycle.

A unique feature for system deployment, established by DARCOM, is the use of the Statement of Quality and Support (SOQAS). The SOQAS states that for a specified period (normally 30 to 60 days) during deprocessing, new equipment training, checkout and initial system support, DARCOM will assume certain responsibilities for repair and/or replacement of equipment at no cost to the gaining command.

This report also includes potential problems facing a PM during system deployment and some solutions to these problems as recommended by PMO's and as outlined in regulations reviewed. Problems highlighted in this report are; controlling the quality of full-scale-production items, coordinating transportation of systems and system components from contractor(s) to user, insuring that the user is prepared to accept the new system, availability of training aids and simulators, establishing repair parts support, and coordinating the deployment of support units and/or technicians to properly coincide with system deployment.

The data presented in this report show that the PM's responsibilities during deployment are as critical and demanding as those responsibilities during other phases of acquisition.

TABLE OF CONTENTS

SECTION I

INTRODUCTION

Purpose of the Study Project

Planning for system deployment and support of deployed systems does not start at the beginning of the production phase of the system acquisition process. Deployment planning is an integral part of ILS planning throughout the system acquisition process.

The purpose of this paper is to examine the Program Manager's responsibilities and planning requirements for deployment during each acquisition phase and to identify documents and tools that are available to assist the Program Manager (PM) in carrying out this mission. In addition this report will identify potential problem areas during deployment, possible solutions, and follow-on-support requirements facing the PM after deployment.

SECTION II

METHODOLOGY

Research was accomplished through review of DOD, DA, DARCOM regulations and documents to determine at what point, in the acquisition process, that emphasis on deployment starts and to see if these documents and regulations adequately cover system deployment.

Personal interviews were conducted at Program Management Offices (PMO's) (to include reviews of deployment plans) to determine if PMO's were following guidelines established in the above regulations, and to identify potential problems during deployment.

Personal interviews were also conducted with personnel at DARCOM headquarters to determine the extent of written guidance, on system deployment, issued by that headquarters.

SECTION III

Analysis of Data

DOD and DA Regulations

General: All regulations/directives/instructions (see bibliography) reviewed emphasized early ILS planning and execution and continual emphasis throughout the materiel acquisition process. Even though this report will focus on the deployment portion of ILS, research shows that effective planning and execution of ILS throughout "development-to-production" cycle of system acquisition is vital to smooth system deployment. As mentioned above, all regulations reviewed emphasized ILS during development of a system. Except for DARCOM's supplement to Army Regulation 700-127, dated 16 July 1976, individual regulations included very little specific guidance on system deployment. However the importance of planning and management of system deployment could be derived from the collective body of regulations. DARCOM's supplement provides specific instructions and guidelines on how to plan and execute system deployment.

Because of emphasis now being placed on overall ILS (due to rising Operation and Support Cost of New Systems) each threshold and major milestone in the System Acquisition Life Cycle requires the PM to consider ILS as an integral part of system design. ILS requirements are outlined in

general terms in some of the regulations and in detail in others. However, in terms of deployment (except for DARCOM Supplement mentioned above) the PM would have to rely on his own initiative to determine how and what to plan for when deploying a system. Collectively the regulations form a system that imposes certain requirements, reports, plans and program reviews and decision points that provide checks on how well the PM is planning for system deployment. To track the chain of events, it was necessary to review all regulations for general ILS actions required during each acquisition phase leading to deployment. The results follow:

Conceptual Phase: The Conceptual Phase formally starts with signing of a Letter of Agreement (LOA). The LOA is a jointly prepared document in which the combat developer and the materiel developer outline a basic agreement for further investigation of a potential materiel system. The LOA provides for formal initiation of system investigation and support efforts in the Conceptual Phase. During this phase logistic involvement is oriented toward establishment of support consideration that will influence the design of the materiel system. The LOA must contain a narrative description of the activities (such as the analysis of equipment and maintenance performance data on deployed systems) needed to identify potential logistics problem areas, support parameters,

logistics resource and system restraints, preliminary qualitative and quantitative personnel requirements information, and alternate support concepts (10:4).[1]

Even though considerations for system deployment are not specifically mentioned, it is reasonable to assume that if the new system is being considered for replacement of a deployed system or is similar to a deployed system, consideration would be given to investigating logistical problems that may have specifically affected the deployment of the existing system. This could prevent or reduce similar problems from becoming part of the new system.

Prior to approval or during the approval process a Special Task Force (STF) or Special Study Group (SSG) may be formed to validate the LOA. If the project will require a Project Manager, a designee is appointed as a member of the SSG or STF. Products from the SSG and STF will include documents that support the initial decision points to proceed with development of the system. These same documents are updated and used to support critical decisions throughout the systems life cycle (15:C-2). Depending on the level (DOD or DA) of interest in the program, the documents may include

---

[1] This notation will be used throughout the report for sources of quotations and major references. The first number is the source listed in the list of references. The second number is the page in the reference.

the Army Program Memorandum (APM), Defense Program Memorandum (DPM) and the Decision Coordinating Paper (DCP). These documents present rationale for starting, continuing, re-orienting, or stopping a selected program at each critical milestone in the acquisition cycle. They identify the objectives, conditions, and issues pertinent to each decision and assess all important factors which influence the decision. The difference between the documents is the level in the chain of command at which they are applicable. The APM is the principal discussion document at each Army System Acquisition Review Council Reviews (ASARC) and when approved it constitutes a contract between Headquarters, Department of the Army and the Materiel Developer. The DPM is the official document which records the decision(s) of OSD staff principals. This document is required when managing programs which are of special interest to OSD, but not important enough to warrant a Defense System Acquisition Review Council Review (DSARC). When approved this document constitutes a contract between OSD and the Army and defines the Army's latitude in managing the program. The DCP is the principle discussion document at each DSARC/ASARC review and the official document which records the decision(s) of the Secretary of Defense. After approval the DCP constitutesa contract between OSD and the Army and defines the Army's latitude in managing programs

which are subject to DSARC review. As mentioned, these three documents are nearly the same and follow the same general format (7:1-1).

Of importance to this report, is that each of the above documents are required to contain a section titled "Logistical Support", that summarizes the plan for ILS and critical issues of supportability (including system deployment factors). These documents, together with a Concept Formulation Package (CFP), form the basis for the Outline Development Plan (ODP). The ODP is discussed later in this report. The CFP may be produced by the SSG and/or STF and supports the content of the DCP, DPM and APM. This document addresses trade-off determination and analysis, best technical approach, and cost and operational analysis. Logistical requirements are considered in all three of these areas with special interest on environmental and ecological factors that must be considered by the Army when deploying a new system (10:7-2).

When a Project Manager has been designated, he will use the CFP and data from the DCP, DPM or APM as input to the Outline Development Plan.

The PM is responsible for preparation of the ODP, which contains the materiel system concept agreed upon by the materiel developer and combat developer. The ODP supports the LOA by providing a definitive plan for management of

the advance development efforts to achieve the materiel objectives addressed by the LOA. The ODP's level of detail is tailored to the needs and stage of development of the particular program. The contents of this plan will eventually form the basis for the PM's development plan (DP) prepared later in the system acquisition cycle. Logistic involvement at this time is oriented toward the establishment of support considerations that will influence the design of the materiel system. However, this involvement includes identification of logistic implications that have an impact on operational readiness, training, personnel, and identification of alternative logistic support concepts. The ODP for each materiel acquisition program will include milestones for verifying logistic support at each materiel acquisition decision process. Section VI of this plan becomes the initial focal point for the complete documentation of logistic requirements, issues and plans (13:2-0).

The documents and planning discussed above support and summarize the system's progress during the Conceptual Phase and support program reviews and major decision points that authorize continuation into the next phase (Validation). Program reviews and decision points provide a check on the PM to insure that the program is progressing satisfactorily and/or ready for transition into the next phase. Analysis

of program reviews and decision points, throughout this report, will focus only on logistical aspects as related to fielding of a system.

The PM of a major program is faced with at least five (5) program review/decision points in the Conceptual Phase prior to entry into the Validation Phase. Non-major programs will have less depending on command interest in the program. The review/decision points in the Conceptual Phase are: Review and Command Assessment of Projects (RECAP), Department of the Army Program Report (DAPR), Logistic and Command Assessment of Projects (LOGCAP), ASARC-I and DSARC-I. The RECAP briefing is given by the PM, either quarterly or semi-annually, as designated. The briefings are given to the DCGMD or DCGMR at DARCOM headquarters. The purpose of the RECAP is to review the program's progress (as of the date of the briefing). The RECAP emphasizes significant events and existing or potential problem areas, the resolution of which is dependent upon required assistance from HQ DARCOM or higher headquarters. ILS is included as a part of these briefings. The RECAP's will focus on those ILS actions which reflect the project's position in the materiel life cycle and include those ILS actions that should be initiated and/or completed during the associated phase. The DAPR is presented in the same format and covers the same data as in the RECAP,

except it is presented at Department of the Army level. The DAPR is submitted as a written report, quarterly and briefed by the PM once a year. During a DAPR the scope of ILS data presented is the same as presented in the RECAP and as appropriate for the phase of the program (16:5).

The LOGCAP is strictly a logistic review that is presented by the PM to DARCOM headquarters. The specific intervals and conditions under which this review is required are outlined in DARCOM's supplement to AR 700-127, dated 16 July 1976. LOGCAP's appear to be primary logistical check points for verifying the PM's progress in planning for and executing ILS throughout the materiel life cycle. To the extent practical (depending on phase of the program) each LOGCAP will emphasize assessment and evaluation of the following (17:19).

- Current and anticipated critical supportability issues.
- Significant logistic changes since the last presentation.
- Status of the maintenance test support package for up-coming test phases.
- Status of preparation and coordination of the Materiel Fielding Plan (discussed later in this report).

The DSARC I and ASARC I are decision points to determine whether or not the Conceptual Phase has been completed and whether the program is ready for transition to the Validation

Phase. The DCP and the DPM/APM, as discussed earlier, support the DSARC and ASARC process respectively. These documents and associated briefings by the PM must show that logistic considerations have been injected into the design process and the logistic environment, in which the materiel system will be deployed, has been identified and considered (5:A-1).

After program reviews and decision points have been completed and a decision made to enter into the next phase (Validation), the ODP is updated to include results of decisions. Validation Phase starts with a contract being awarded for advance development prototypes.

Validation Phase: This phase consists of those steps necessary to verify preliminary design and engineering, accomplish necessary planning, analyze trade-off proposals, resolve or minimize logistic problems identified during the Conceptual Phase, prepare a formal requirements document, and validate system concept for Full-Scale Development (6:2-0).

After the contractor(s) have produced prototypes, the prototypes undergo Development Test (DT-I) and Operation Test (OT-I). The DT-I test is conducted primarily to demonstrate that technical risks have been identified and that solutions are in hand. OT-I is accomplished by operational and support personnel of the same type and qualifications

as those expected to use and maintain the system when deployed. OT-I will be conducted in as realistic an operational environment as possible (2:2). From a logistical standpoint this is the first opportunity the PM has to actually estimate the adequacy of the concepts for employment, logistical supportability and training requirements. After the tests (OT/DT-I) are completed the data are analyzed to identify potential logistic supportability problems. The analysis results support; training support planning, development of Initial Unit Structure and Basis of Issue Plan I, determination of training device requirements, tentative Military Occupational Specialty Evaluation, initiation of resident training plans and new equipment training plans. All of these efforts impact on system deployment, and will be used to update all plans, decision and requirement documents. The primary requirements document that is established during this phase is the Requirements Operational Capability (ROC) (15:C-8).

The ROC evolves during the investigations conducted under the LOA and eventually replaces the LOA. The ROC is a Headquarters Department of the Army document which states the minimum essential operational, technical, logistical, and cost information necessary to initiate full-scale-development or procurement of a materiel system. Basically the ROC supersedes the LOA and provides specific system

requirements throughout the remainder of system development. The ROC must have a logistic assessment paragraph which identifies logistic considerations that impact on further full-scale development of materiel and logistic support systems. Such considerations will have evolved from advanced development and test efforts and include: (10:E-1)

- A baseline logistic support concept
- Potential logistic problem areas
- Preferred limits on the need for logistic support elements resources.
- Current and projected changes to pertinent supply, maintenance, and transportation systems and procedures.

The ROC may or may not be validated by a SSG or STF as discussed earlier for the LOA. After approval, the ROC and the ODP will be incorporated into a Development Plan (DP). The DP is prepared to support the decision to proceed to Full-Scale-Development (FSD).

The DP is refined and updated, as required, and is the PM's primary planning document throughout the remainder of the acquisition cycle. Logistic aspects of the DP are more specific than the ODP. The DP contains a plan for logistic support and milestones for verifying logistic support at each key decision point. The DP also includes: identification of anticipated critical issues of support-ability, identification of anticipated logistic environment

in which the system is expected to operate, effect on the environment, goals for life cycle support costs, and recommended maintainability and reliability parameters. Most important is that Section VI (Logistic Section) of the DP will eventually evolve into the Materiel Fielding Plan (discussed later) (13:2-3). The DP is used to update the DCP, DPM and APM, and support the second round of program reviews and decision points. The type program reviews discussed in the Conceptual Phase are also applicable to this phase. However, for non-major programs a Validation In-Process Review (IPR) is conducted by the Materiel Developer/ Mission Assignee Agency in place of the DSARC/ASARC review and its purpose is to determine entry of the system into full-scale-development. RECAP/DAPR and LOGCAP briefings are conducted as required in the same format and frequency as discussed for the Conceptual Phase. However, the data are updated to reflect progress and problems associated with the Validation Phase. Logistical data, in the updated DP, will provide the basis for the logistic presentations during program briefings (including the DSARC/ASARC-II).

The Validation Phase ends with DSARC/ASARC-II determination to proceed to full-scale-development and approval of the DCP-II, DPM/APM-II as appropriate. Up to this point, the DP (Section VI) is the primary source document for logistic

planning. Consideration and planning for deployment are beginning to take on importance in this document.

Full-Scale-Development Phase (FSD): FSD Phase begins with the awarding of a contract for Engineering Development. In this phase the hardware takes on a final configuration for production. Therefore, logistic planning for deployment becomes more finite. Testing during FSD (OT and DT-II) provides a primary means for analyzing logistic requirements for support and deployment of a system. Specifically the OT-II, through use of controlled field exercises, will examine logistic support training requirements associated with planned operational employment of the system. Results will be used to update the DP. During FSD, the Materiel Fielding Plan (MFP) will be developed as separate documents (one for deployment to each Major Army Command). The MFP will be based on the updated DP (Section VI) (17:20).

The MFP is a single document that contains plans and actions required for the deployment of an end item or materiel system. The format of a MFP is outlined in Appendix A of this report. The MFP contains plans, schedules, procedures and DARCOM/Gaining Command actions necessary to successfully deprocess, deploy, and sustain the materiel to be deployed. Each MFP will be fully explained and coordinated with the gaining command sufficiently in advance of fielding to assure

adequate and timely deployment of materiel, accompanying logistic support, and the availability of trained personnel. Gaining commands should be notified of the intent to field a new system, that a MFP will be developed, and that point of contacts are needed. Section V of the MFP is reserved for DARCOM's Commitment to the gaining command. This commitment is similar to a warranty used by commercial firms. When the commitment is put into a formal written document it is called a "Statement of Quality and Support" (SOQAS) (See Appendix A) (17:20). The MFP is an agenda item of interest at the DSARC/ASARC-III reviews, the RECAP/ DAPR, LOGCAP's, and must be addressed in the Logistic Support Summary prepared for DSARC/ASARC-III.

Production/Deployment Phase: The purpose of DSARC/ASARC-III is to determine if a system should enter production. When approval for production has been given and production start, the MFP and all related ILS plans are implemented. See Appendix A of this report for those MFP actions to be implemented.

Logistic Support Analysis (LSA): Not mentioned earlier in this report but considered important to successful planning and execution of fielding a system is LSA. Army Regulation 700-127, dated 11 April 1975, directs that a comprehensive LSA be performed by the Materiel Developer on all new

materiel being acquired. As the interface between materiel design and support planning, LSA is the single logistic analytical effort used to define support criteria and support system requirements. LSA is applied during all phases of the materiel acquisition program. DARCOM's agent for LSA is the U.S. Army Maintenance Management Center (USAMMC). USAMMC is the focal point for LSA data collection and evaluation. USAMMC also develops implementing guidance and procedures for achieving ILS and conducts LSA within DARCOM. Data involved with the LSA system and LSA record are shown at Appendix B. The chart at Appendix B is provided by USAMMC.

Deployment Problems and Solutions

Review of DOD/DA regulations, discussions with selected PMO's (see list of references) and review of PMO planning documents, highlighted many potential problems that could be encountered when fielding a system. This section of the report will discuss those potential problems considered most critical, including solutions that were suggested by the PMO's and/or DOD/DA regulations reviewed.

Production Quality Control: The materiel acquisition system takes into account, that systems may not make a successful transition from an engineering prototype item to a production

item. For that reason, OT/DT-III are conducted, using initial production items to verify that the item can be produced in large quantities and still meet all technical and operational requirements. Once an item has been approved for full-scale-production (except for government acceptance inspections) formal tests are not automatically required. Yet these are the items that will meet the IOC and enter the Army's inventory at all levels. This means the possibility of defective items still reaching troop units. One solution may be to sample test items during full-scale-production using similar procedures used in DT/OT-III. Cost may prohibit this course of action for major systems. However, for small inexpensive systems this course of action is more feasible. Another solution is to ship produced items to selected Army depots or to some point under Army developer's control, where consolidation, system integration and complete inspection/test can be performed before the items are issued to the troops. Versions of this procedure were used, very successfully, for the Lance Missile Deployment and is currently a part of U.S. Army's Dragon Anti-Tank Weapons Deployment Plan (24). The Dragon and other similar weapons are ideal for this type action because they are small in size, easily handled, storable in large quantities and require simple inspection and testing

(see Appendix C for sample of consolidation procedures used by the Lance Missile PMO). To be cost effective, the consolidation point must be closer to the final destination than the contractor's manufacturing facility. Less expensive methods may be used such as deprocessing teams and warranty programs. These methods were used successfully during the M60A2 Tank and Lance Missile System Deployment (25) (24). Deprocessing teams are sponsored by the PMO. For overseas shipments, the teams receive and inspect/checkout all items prior to issue to troop units. The warranty (SOQAS) program allows items to be replaced or repaired, at no expense to the user, before issue and for a specific length of time after issue. Contractor warranties should also be investigated in an effort to reduce the possibility of user being burdened with defective new equipment (11:4-2).

Transportation Coordination: Generally, the transportation of new equipment from production facilities to final destination appears to be a simple process. However, discussions with PMO's revealed that transportation can be a most critical and complicated operation. This is especially true with large systems that consist of many separate subsystems, that must be shipped from different production facilities. Consolidation and system integration can be a nightmare if not properly controlled and coordinated. Instead of allowing the normal

functional transportation chain to unilaterally control these shipments, PMO's suggested using one individual (within the PMO) to be the focal point for controlling and coordinating all shipments from contractors (24). Another possible solution is to use government depots/warehouses as consolidation points as discussed above for Production Quality Control. With the total system consolidated at one location and under the PMO's control, shipment to users can be easily coordinated.

User Preparedness to Accept New Equipment: Due to preoccupation with normal day-to-day business, the user may not be prepared to accept new equipment. Unless the PMO takes early aggressive action to insure the gaining command is fully aware of the characteristics of the new system and the commands responsibility for deployment, then problems of coordination, training, use of the equipment and complaints are sure to surface in great quantities. Some solutions are:

- Keep potential system users informed on the system throughout development (info letters, briefing teams, etc.).
- Coordinate MFP with user before it becomes final. Provide user with copies of final plan.
- Use of jointly signed deployment agreements (PMO and user) outlining schedules and responsibilities.
- Use of New Materiel Introductory Letters and New Materiel Introductory Briefing Teams (17:26).

Availability of Training Aids and Equipment: The U.S. Army Training Aid Agency has the responsibility for acquisition of all Army training aids. Detail coordination is required between the Agency and the PMO, so that the training equipment is available when needed. Jointly signed written agreements specifying responsibilities and requirements can reduce or eliminate problems in this area.

Repair Parts Support: Problems are; poor initial estimates for ASL's and PLL's, insufficient spares to fill the supply pipeline for follow-on support, and early zero balances in ASL's and PLL's. Zero balances of repair parts early in deployment can cause excessive equipment down time, affect training, and degrade user confidence in the equipment.

To reduce the above problems an early action would be to establish a Support List Allowance Card (SLAC) deck. SLAC decks are listings that depict repair parts required as initial issue for support of a particular piece of equipment. The SLAC deck is prepared by the appropriate National Inventory Control Point (NICP). The SLAC deck should be made available as soon as possible to the gaining command for screening against theater on-hand assets. Marked-up lists are returned by the gaining command to the NICP for use in establishing a supply base and pipeline for required parts (12:9-5).

Accumulation of demand data is the primary method used

for determining frequency of requisitioning and quantities of repair parts to prevent zero balances in PLL/ASL's. However, actual demand data are usually not available for newly deployed equipment. In these situations, experience factors for part's mortality, from early testing/training exercises (available to PMO/contractors or NICP), should be considered for use to compute replacement quantities and requisitioning frequencies. Initial issue of spare parts usually amount to 45 days (or less) of stock.

For new systems with large quantities of system peculiar repair parts, consideration could be given to increasing the stockage level of initial spares within the gaining command's inventory. The larger quantity (perhaps one years stockage) could allow sufficient time for build-up of demand data to requisition follow-on replacements. In any case, it is important that the user be advised to initiate requisitions, sufficiently in advance of receipt of new equipment to accommodate normal order/shipping time and to maintain established safety levels. In addition, high demands for periods of peak activity; i.e. gunnery qualification, training exercises, etc., should be anticipated in sufficient time to insure adequate logistic support. If the DARCOM SOQAS' and PMO fielding teams are used, care must be taken to insure that provisions are agreed upon

(between user and PMO/DARCOM) that allow for user to assume full responsibility, after a reasonable period, for the continued deployment and support of new equipment. This should include re-establishment of normal supply channels for repair parts no longer covered by the SOQAS. This action is to prevent the gaining command from becoming totally dependent on PMO and/or DARCOM (25).

Another important repair parts action is to make the gaining command aware of critical spares (NORS) and spares requiring long lead time for procurement.

Deployment Coordination of Equipment and Support:

Deployment of equipment ahead of support units and technicians creates problems in the area of both maintenance and supply support. Matching support to equipment can be a difficult balancing act. Planning the required number of units and individual skills is done early in the system acquisition process (as discussed earlier in this report). The problem during deployment is timely deployment of support unit and/or individual technicians to the gaining command. Technicians and units (where possible) should arrive before a new system, so that system support is operational when the system arrives in the command. Care must be taken to make sure that assignment of technicians are not made to the command too far in advance of system deployment. The reason is to prevent

rotation of these individuals out of the theater, creating skill shortages when the system actually arrives (25).

Controlling the issue of equipment during deployment within a major command can be made less complicated by issuing all authorized allowances to one TOE unit at a time (size TOE units depend on PMO capability). This procedure allows the PM to minimize and centralize the efforts of fielding/controlling teams.

Follow-on-Support: After a system has been deployed and is under the control of the gaining command, the PMO may still be faced with follow-on-support. The type of support may be; monitoring maintainability/reliability, critical repair parts support, and product improvement. In general, established data collection programs will be used in assessing operational effectiveness and determining areas for system improvements. The PM is not specifically tasked with these functions by regulations, but because he is the focal point for a new system immediately following deployment, he may be tasked either with data collection functions or the monitoring of collection results.

SECTION IV

SUMMARY AND CONCLUSION

Summary: In general, the importance of treating materiel deployment as a separate entity within ILS was not fully recognized until publication of AR 700-127, dated 11 April 1975, and more so with the subsequent publication of DARCOM Supplement #1 to AR 700-127 dated 16 July 1976. Prior to publication of these regulations, the emphasis on ILS was during the Development-To-Production phases of the system acquisition process. Even through many of the ILS actions accomplished during development/production phases impacted on deployment, command emphasis appeared to be on producing equipment at the lowest cost, accomplishing technical performance and required production to meet IOC date. With the exception of the two documents mentioned above, all regulations reviewed and comments from PMO's revealed that little specific written guidelines were provided to PMO's concerning deployment. The degree of success in deployment was primarily based on ingenuity and individual efforts of the PM. The M60A2 tank deployment was one of the success stories where there was no formal written fielding plan, but due to the extraordinary efforts of the PM and his office, deployment was a success. Lessons learned from the M60A2 deployment and the Lance Missile deployment (Lance PMO had a detailed MFP) form the basis for the required MFP

discussed in this report and outlined at Appendix A (22). Without a detailed coordinated plan, many potential problems face the PMO during deployment. Some of the most critical are; controlling the quality of full-scale-production items, coordinating transportation of systems and components from contractor(s) to user, assuring that the users are prepared to accept new systems, availability of training aids and simulators, establishing adequate repair parts support and finally coordinating deployment of support units and/or technicians to coincide with system deployment.

Deployment of a system requires the same intensive control, coordination and detailed planning as is necessary for managing a system through development and production. Smooth deployment of a system can also promote user confidence in new equipment. System program reviews at critical system acquisition milestones, currently place emphasis on monitoring the PM's efforts, progress and plans for sytem deployment. The PM is required to initiate a separate MFP during FSD and report on the status of the MFP until it is implemented during production/deployment. In addition the PM is required to participate in the LSA program as discussed earlier in this report.

Conclusion: Collectively the regulations (including command program reviews) discussed in this report currently

provide sufficient guidance and check points for deploying a new system. The requirement for a MFP forces the PM to plan early for all aspects of deployment. Materiel Introductory Letters along with personal visits by PM's to a gaining command are important in insuring that the command is aware of a new system's characteristics, capabilities, limitations and requirements prior to deployment.

Issuing equipment to one TOE size unit at a time, during deployment, seemsto facilitate training and issuing operations. The DARCOM SOQAS has been well received by the user and promotes user confidence in new equipment. Transportation coordination is crucial in movement of produced systems from contractor facilities to final destination. A central control and coordination point within the PMO seemsto be a good approach to handling this situation.

The PMO's responsibility may not end when the system has been deployed and under the control of the user. The PMO must be prepared to assume a role in monitoring the collection of data for assessing system operational effectiveness and in determining areas for product improvement. In addition the PMO may be involved with critical supply support and other direct support areas.

The final conclusion is that the PM's responsibilities and planning for deployment are just as critical and demanding

as for the development/production phases of system acquisition.

APPENDIX A

INSTRUCTIONS FOR PREPARATION OF MATERIEL FIELDING PLANS (MFP)

(Extract from DARCOM Suppl 1 to AR 700-127)

The following is an outline for the preparation of Materiel Fielding Plans (MFP). The outline may be modified or expanded to meet particular logistic needs of the materiel, gaining command, or other unique circumstances. As much descriptive narrative, diagrams, schedules, illustrations, and similar information should be provided as is necessary to present a complete picture of deployment and logistic support. Each MFP should contain a cover page, table of contents, and list of illustrations (figure number and title).

Introduction. State the purpose of the MFP. Provide the name of the gaining command and the name and model number of the weapon system or end item. Indicate the concepts upon which logistics support is based and any special factors or considerations which influenced them. Include all limitations or qualifications regarding the data presented in the MFP. State status of all logistic elements contained in the MFP and any limitations or qualifications of the proposed logistic support. In each finalized MFP, this section will also contain the formal Materiel Fielding Agreement with signatures by representatives of DARCOM and the gaining command.

End Item Weapon System Description. Briefly describe the end item or weapon system and its associated equipment, including a detailed list of all system end items. Include, as appropriate, photographs, drawings, and the summary characteristics of the system and major end items. Describe the major missions of the system, the level and density of intended use and the dates and quantities of initial and subsequent deployment to the gaining command.

Logistic Support Command and Control. Delineate in detail the procedures to be used to supervise and control logistic support before, during, and after deployment. Include the type, degree, and timing of logistic assistance to be provided including personnel to be stationed with the gaining command, liaison offices, points of contact, and methods to promptly determine and correct materiel defects and early user problems that may arise. Indicate the arrangements and coordination made with the gaining command to assure full understanding of the logistic support concepts and procedures to be used.

System Support Details. Discuss in detail all relevant concepts, procedures, and actions that constitute total logistic planning and support of the applicable weapon system or end item and its associated equipment. Narratives, data, plans, schedules, status, and other information will be

included under each of the below listed system support elements. Use should be made of lists, charts, and schedules which readily portray items, quantities and status of support to be provided, dates and modes of shipment and arrival, locations, percentages, dates of completion, and similar data. Information which does not lend itself to quantitative or statistical presentation should be included as narrative within the appropriate system support element. Concepts, policies, and guidance regarding maintenance and supply support, special requirements or procedures for evaluation of materiel or for emergency requisitioning and plans made to ship, secure, escort, meet, and deprocess equipment are examples of information best suited to narrative.

Discussion of the details in this section will include not only the readiness of total logistic support to field the item, but also the plans and provisions to assure coordinated and problem-free in-theater deprocessing, training, continued support and turnover of equipment to users. The proposed (or actual) plans, schedules, agreements, confirmations, and arrangements to be made with the recipient theater to insure its readiness to receive and utilize support items provided and to confirm deliveries should be indicated. Problems and/or waivers which involve known or estimated incomplete or untimely support should be addressed with

corrective action to be taken. Any other relevant matters pertaining to logistic support should be discussed within this section at the discretion of the materiel manager; and based upon comments from the receiving command.

The below listed elements and sub-elements within this section are not designed to be all-inclusive, nor to reflect sub-elements peculiar to a particular end item/weapon system. They can however, serve as an initial checklist for what is to be included in the fielding plan when applicable. Additional sub-elements required to support a particular end item/weapon system should be included by the materiel manager within this section. All elements and sub-elements should be considered from both a "hardware" and narrative (procedures, concepts, etc.) standpoint.

Support and Test Equipment. (All levels -- organizations, DS, GS depot).

Special tools and sets.

Common tools and sets.

Test, Measurement, and Diagnostic Equipment (TMDE).

Monitoring and checkout equipment.

Calibration equipment.

Special purpose support equipment (e.g. stands, handling devices, shelters, etc.).

Special purpose kits (e.g., winterization and fording kits).

Supply Support.

Associated end items (e.g., weapons and communications equipment for combat vehicles).

Integral Components of End Items (ICEI).

Basic Issue Items (BII) and Additional Authorization List (AAL) items.

Repair parts (organization, DS, GS, depot) (for end items and support equipment).

Provision for Direct Exchange (DX) stockage.

Maintenance Float (end item, component end item) (operational readiness float and repair cycle float) (factors and quantities required).

Special and bulk supplies (e.g., cable, wire, hose, fittings, gasket materiel, POL, etc.).

Depot overhaul parts.

Ammunition and related supply bulletins.

Provisions for the removal of end items, parts, and related equipment no longer required by the gaining command because of new materiel deployment.

Special requirements for evacuation of unserviceable equipment or components.

Transportation and Handling.

Transportability guidance manuals and procedures.

Care, preservation, packing, packaging, and handling.

Special storage instructions.

Provisions for security in transport.

Provisions for off-loading, receiving, deprocessing, storing, securing, and issuing equipment within theater.

Provisions for obtaining notification of receipt of support system items (parts, tools, manuals, equipment, etc.)

Technical Data

Training instructions and manuals (e.g., field manuals, commercial brochures, etc.).

Technical manuals (full series--operator to GS) (end items and components).

Supply manuals.

Lubrication orders

Instruction cards and placards.

Special purpose computer programs.

Inspection, test, and calibration procedures.

Repair Parts and Special Tools List (RPSTL).

Master Support List.

Depot Maintenance Work Requirements.

Facilities information.

End item/weapon system environmental effects (AR 200-1).

Provision for Sample Data Collection immediately upon fielding.

Special provision for modification after fielding.

Prescribed load list (PLL).

Authorized stockage list (ASL).

Facilities

Mobile and/or fixed facilities required for maintenance and/or supply (field and depot).

Environmental control requirements (e.g., humidity, temperature, dust).

Site area and preparation requirements.

Site equipment requirements--permanent and installed (e.g., buildings, shelters, fences, towers, generators, transformers, utilities, etc.).

Quantity distance requirements.

Personnel and Training

MTOE, TOE, MTDA, TDA requirements.

MOS trained personnel to meet the specified Authorized Level of Organization.

Schools (e.g., TRADOC, operator, maintenance) and locations.

Training aids and POI

Technical assistance personnel.

New equipment training:

Key personnel training (e.g., Army instructors, test support, NMP technicians, contractor, etc.).

New Materiel Introductory Letter (NMIL).

New Materiel Introductory Briefing Teams (NMIBT).

New Equipment Training Teams (NETT).

Other special teams and personnel-permanent or temporary (e.g., supply, maintenance, contractor, calibration teams or personnel, developer-user teams, design engineers, etc.).

The Army Materiel Development and Readiness Command

Commitment. This section will describe the formal, written commitment (Statement of Quality and Support (SOQAS)) to be made with respect to the newly fielded end item/weapon system. The description will include the logistic support and services which DARCOM will provide during deprocessing, new equipment training, and transition training. The terms, conditions and period will be specified as well as the planned

method to implement and administer the commitment. (If no commitment is required or otherwise intended, this section will be omitted from the MFP and subsequent sections re-numbered accordingly).

Support Required from the Gaining Command. This section will detail the administrative and operational support which will be required from the gaining command to accommodate the planned stationing of DARCOM personnel on site before, during, and after materiel deployment. The number, type, duration, and location of personnel should be included as well as the billeting, transportation, communications, office space, supplies, and similiar support needed. Operational support required from the gaining command during deprocessing, checkout, and the commitment period such as labor, facilities, utilities, fuel, and equipment should also be specified herein.

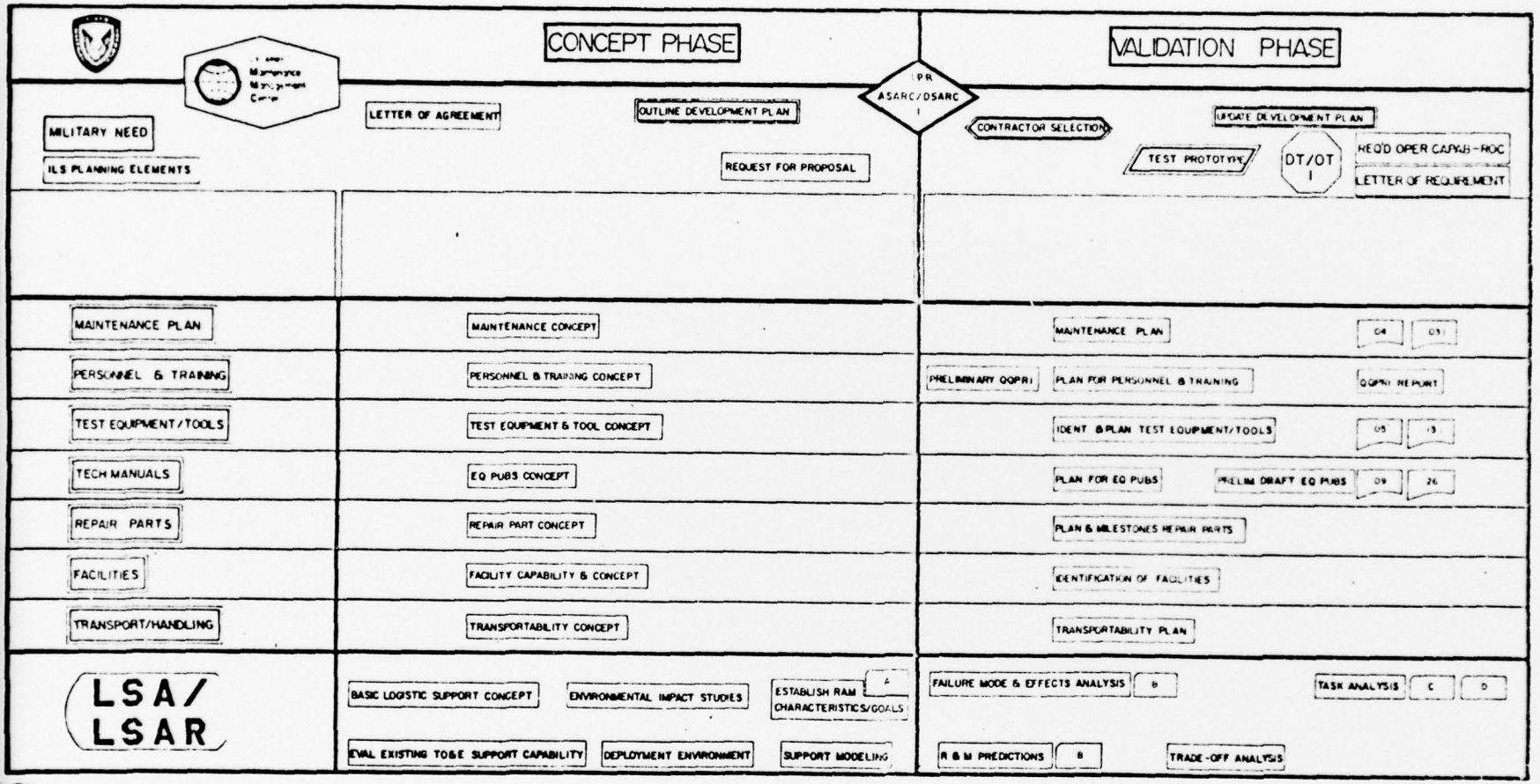
Summary. This section will summarize the status of logistic support for the item involved. It will highlight major accomplishments or weaknesses and any significant issues to be resolved before, during, or after fielding. Any general comments deemed appropriate should also be included.

Appendices. This section will generally describe what is contained within the appendices affixed to the Materiel Fielding Plan and provide an appropriate table of contents.

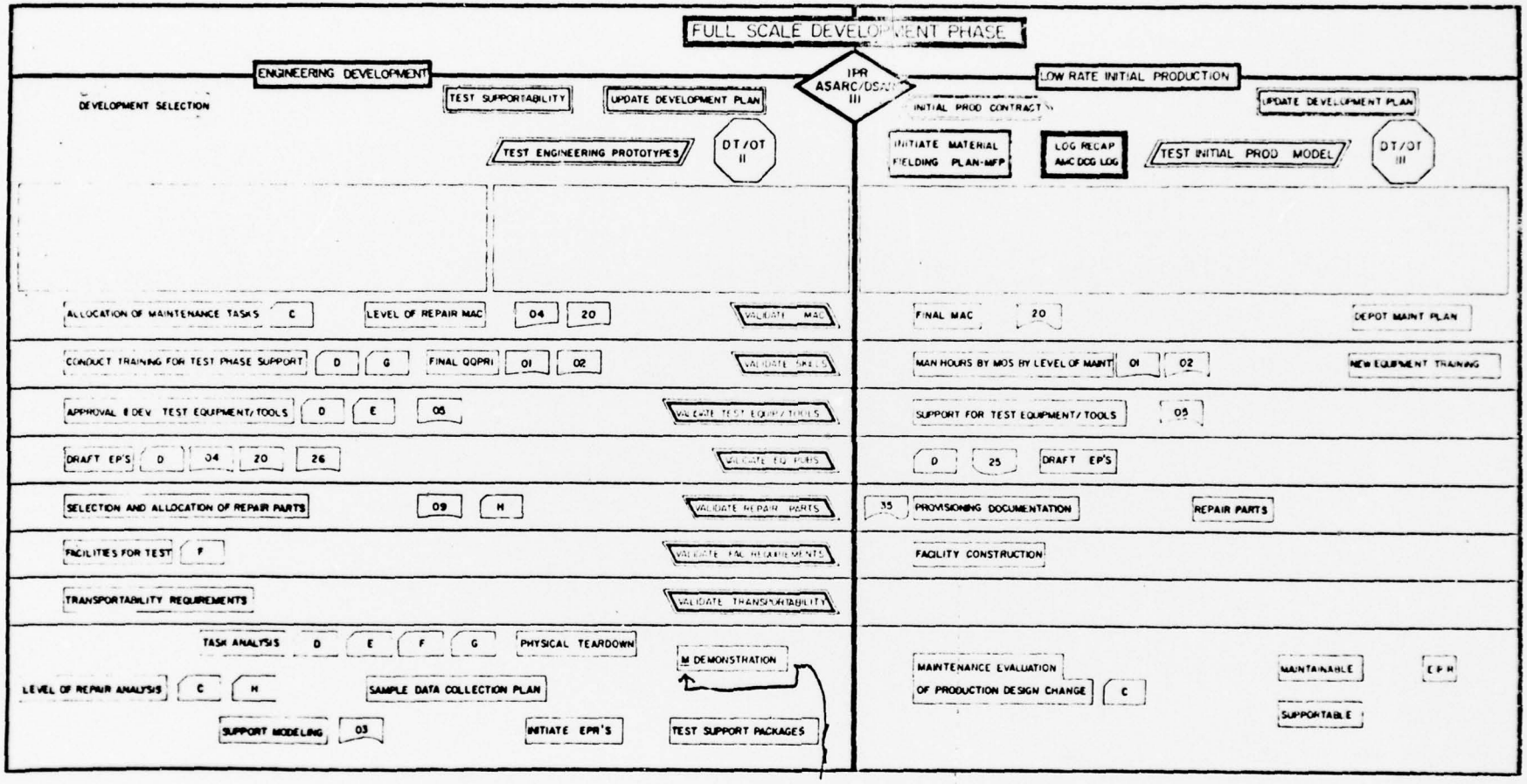
Appendices should be used for specific documents which serve to authorize, justify, clarify, or prove significant decisions, issues, or problems raised within the Materiel Fielding Plan. It should also be used to document plans or agreements reached with respect to logistic support matters discussed in the Materiel Fielding Plan. A listing of the key correspondence (Messages, letters, MFR, etc.) should be included as an appendix in the MFP. Entries should be brief with only enough information to accurately identify the originator and recipient(s), the subject, and security classification. The next to last appendix should contain a summary checklist of the planned, time-sequenced DARCOM actions to be taken relative to the planning, shipment, deprocessing, checkout, training and hand-off of equipment. The last appendix should contain a similiar list which indicates the dated actions the gaining command will be required to take in order for our fielding plans to be timely and effective. Wherever possible, the checklists should reference the specific paragraph number(s) in the MFP to which each of the required actions relate.

APPENDIX B

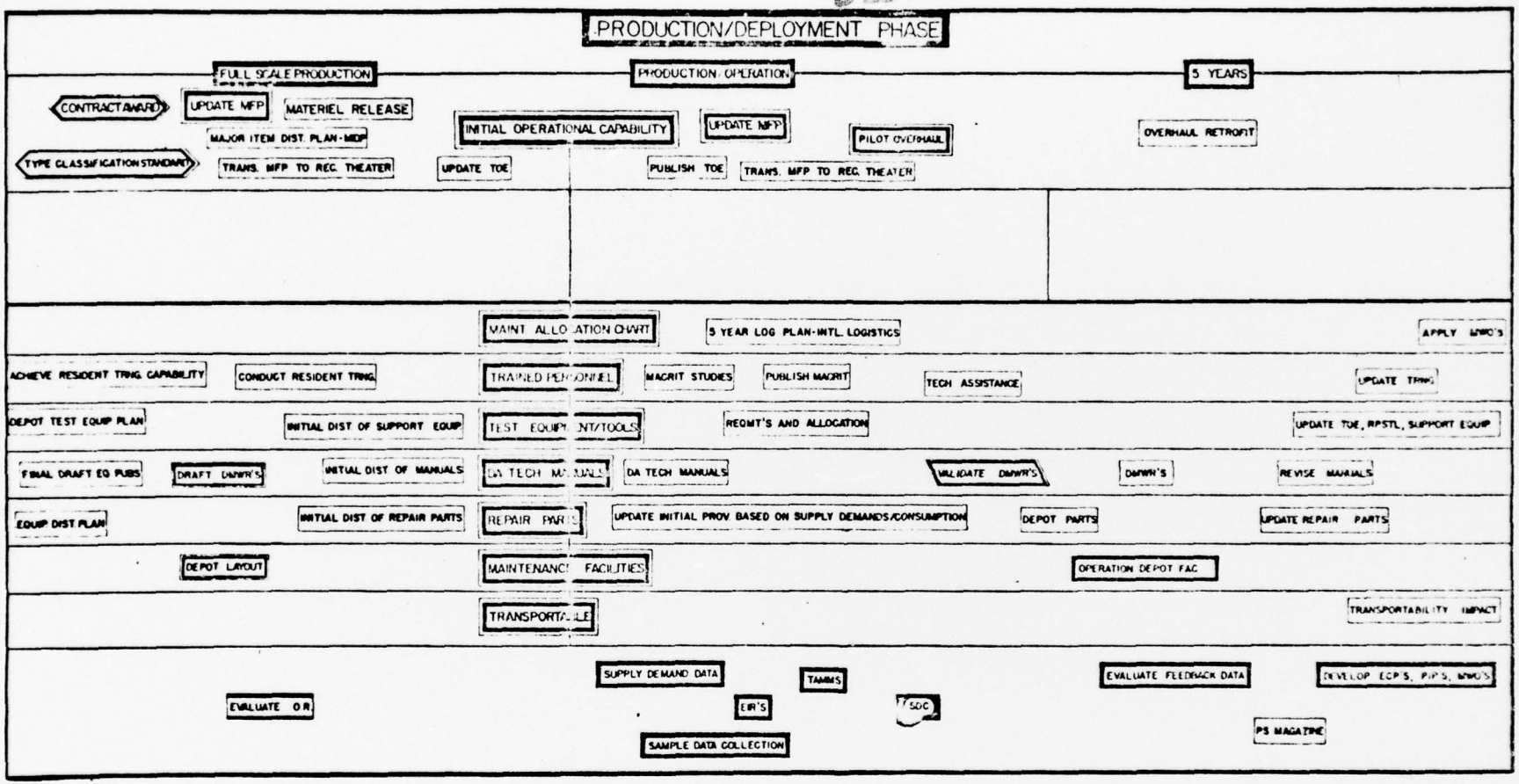
BEST AVAILABLE COPY



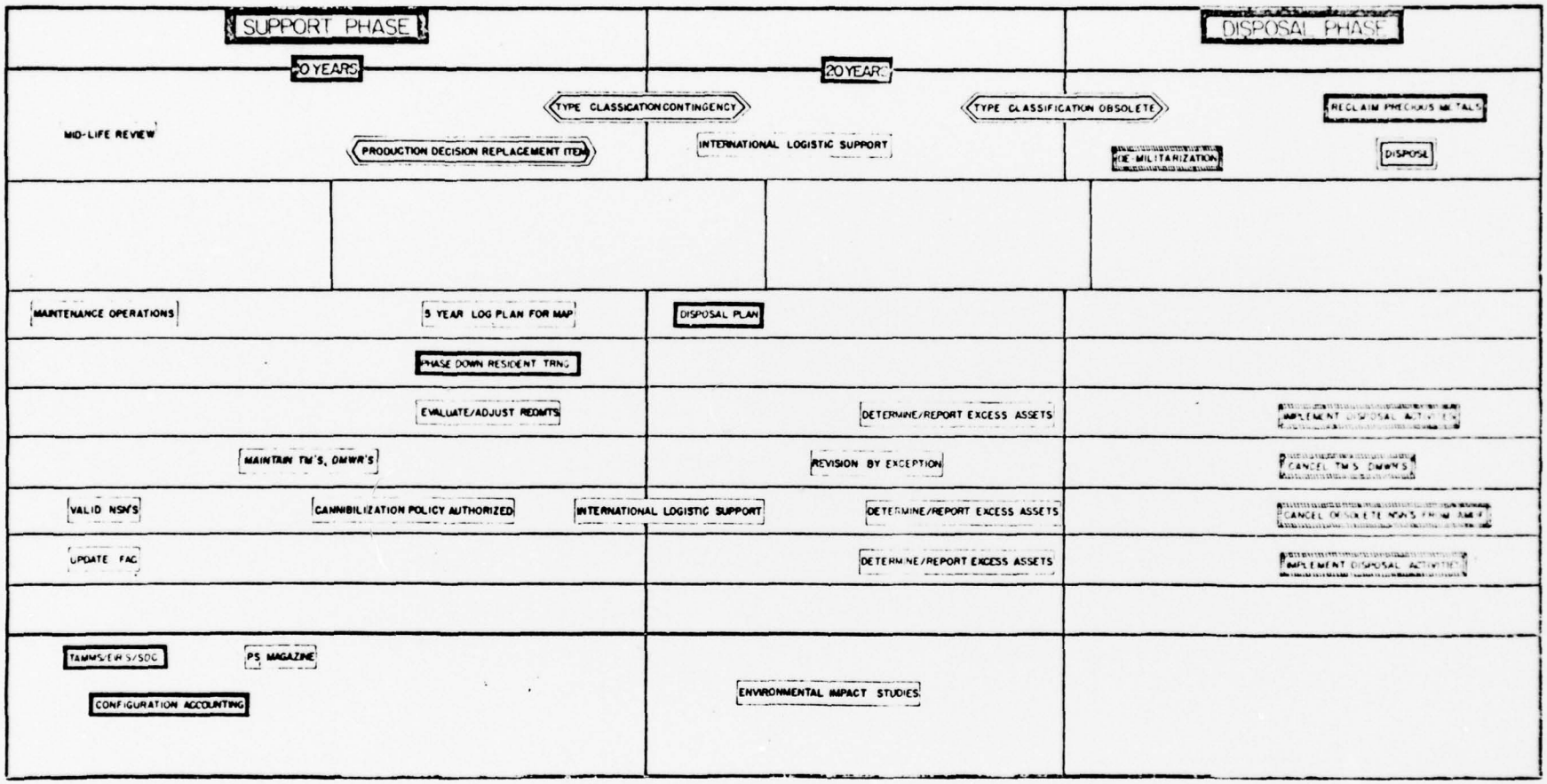
BEST AVAILABLE COPY



BEST AVAILABLE COPY



BEST AVAILABLE COPY



APPENDIX C

GENERAL CONCEPT
BATTALION GROUND SUPPORT EQUIPMENT *

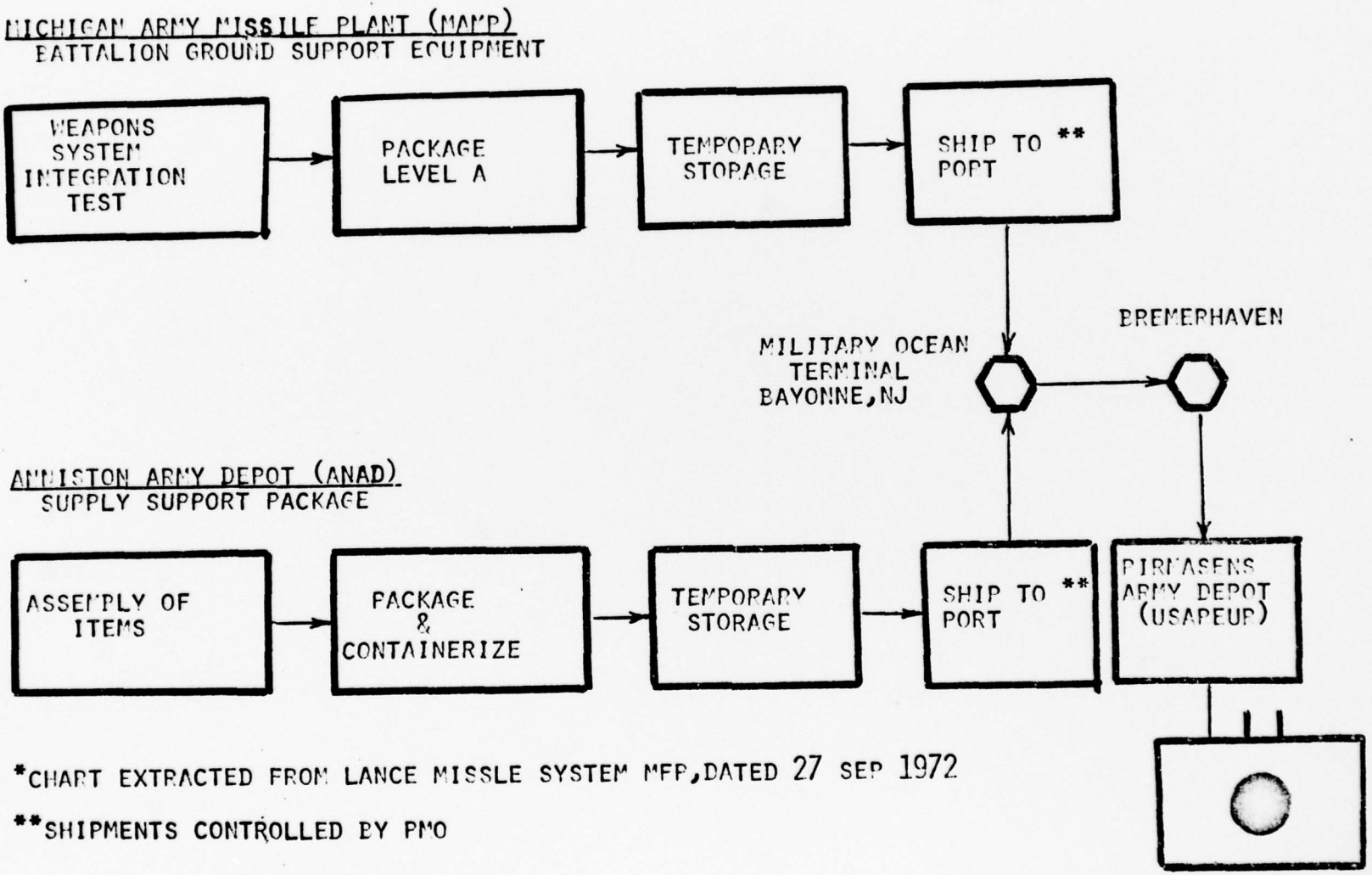


*CHART EXTRACTED FROM LANCE MISSLE SYSTEM MFP, DATED 27 SEP 1972

**SHIPMENTS CONTROLLED BY PMO

LIST OF REFERENCES

1. Department of Defense Directive, number 5000.1, Acquisition of Defense Materiel, 1 September 1976.

2. Department of Defense Directive, number 5000.3, Test and Evaluation, 19 January 1973.

3. Department of Defense Directive, number 4100.35, Development of Integrated Logistic Support for System/ Equipment, 1 October 1970.

4. Department of Defense Instruction, number 5000.2, The Process of Major Systems Acquisition, 1 September 1976.

5. Department of the Army Regulation, number 15-14, Systems Acquisition Review Council Procedures, 24 Jan 1975.

6. Department of the Army Regulation, number 70-1, Army Research, Development, and Acquisition, 1 May 1975.

7. Department of the Army Regulation, number 70-27, Outline Development Plan/Development Plan/Army Program Memorandum/Defense Program Memorandum/Decision Coordinating Paper, 17 March 1975.

8. Department of the Army Regulation, number 71-2, Basis of Issue Plan, 19 April 1976.

9. Department of the Army Regulation, number 71-3, User Testing, 17 March 1975.

10. Department of the Army Regulation, number 71-9, Materiel Objectives and Requirements, 7 February 1975.

11. Department of the Army Regulation, number 700-4, Logistic Assistance Program, 2 April 1974.

12. Department of the Army Regulation, number 700-120, Materiel Distribution Management, Change Number 2, 21 February 1975.

13. Department of the Army Regulation, number 700-127, Integrated Logistic Support, 11 April 1975.

14. Department of the Army Regulation, number 1000-1, Basis Policies For Systems Acquisition by the Department of the Army, 5 November 1974.

15. Department of the Army Pamphlet, number 11-25, Life Cycle System Management Model For Army Systems, May 1975.

16. Department of the Army Readiness Command Regulation, number 1-34, Program Reviews, Review and Command Assessment of Projects (RECAP), Department of the Army Program Report (DAPR), 25 February 1976.

17. Department of the Army Readiness Command Supplement number 1 to AR 700-127, Integrated Logistic Support, 16 July 1976.

18. U.S. Army Missile Command Materiel Fielding Plan, TOW Logistic Support System, undated.

19. U.S. Army Missile Command New Materiel Introductory Letter, TOW Weapon System, July 1976.

20. U.S. Army Missile Command Materiel Fielding Plan, Lance Missile System, 27 September 1972.

21. U.S. Army Missile Command Letter, Dragon Fielding Agreement - USAREUR, 20 June 1975.

22. Edwards, Fordyce. Interview at Department of Army Materiel and Readiness Command (DARCOM) on 26 August 1976. Mr. Edwards is involved with ILS plans within the Associated Directorate for ILS.

23. Knowles, Kenneth LTC, USA. Telephone interview U.S. Army Missile Command Stinger Project Office on 3 Sep 1976. LTC Knowles is Chief of Logistic Support Division in the Stinger PMO.

24. Oberg, Richard LTC, USA. Interview at U.S. Army Missile Command Lance Missile Project Office on 3 September 1976. LTC Oberg handles Logistic Support in the Lance Missile PMO.

25. Winklareth, Robert J. Interview at Department of Army Materiel and Readiness Command (DARCOM) on 26 August 1976. Mr. Winklareth is an engineer with in the Associate Directorate for Integrated Logistic Support and is knowledgeable of the M60A2 Deployment.